Tests of passive control methods to prevent upstream movements of New Zealand mudsnails

#0054

Technical Panel Review

Proposal Name: Tests of passive control methods to prevent upstream movements of New Zealand mudsnails

Applicant Organization: Colorado State University

Principal Lead Investigator(s):
Myrick, Christopher

Amount Requested: $295,142

TSP Panel Summary of Findings:

This is very well written proposal that is easy to read and understand. The investigator sets out the research hypotheses in a clear manner and the experimental design lends itself to testing each hypotheses. The results will likely provide clear evidence on the feasibility of different barriers to prevent the spread of the mudsnails. While the investigator has conducted most of his prior work on fish, the reviewers correctly point out that this project is not terribly complicated and hence see no reason that the desired results cannot easily be achieved. Perhaps the biggest concern raised by the external reviews is that the background section is weak and the project seems expensive in comparison to similar studies funded by other agencies. The shortcomings of the background section are not serious, although more information on the ecological damage from New Zealand mudsnails would be helpful. One issue that is not addressed in the proposal is that if an effective barrier(s) to the upstream movement of the mudsnail is identified, is it feasible to implement that barrier? If yes, how important might it be to control upstream spread while downstream remains unchecked? Furthermore, the movement of the mudsnail downstream is not addressed. Additionally, the investigator focuses on whether there is a statistically significant effect of factor X on snail movement (factor X differs depending on which of 3 experiments is being considered). Perhaps the focus should be on prevention, not just slowing the snails down. It is not apparent how realistic the outcome of these experiments might be for snail control.

They can probably tell us about the potential of a certain type of barrier, but we may never know how effective they are in the real world. Since Colorado (where the PI is based) appears to be suffering from the invasion of this species, it would be instructive to learn what has been done, or tried, and what the ecological consequences have been of such an invasion. The panel felt the greatest shortcoming of this proposal was the relevence of the proposed outcomes to CALFED priorities.

Should this project receive support it would be worthwhile to carefully examine overall project costs. The budget seems excessive for a narrowly focused laboratory study on a single species, though one that may be especially significant.

Relevance to PSP Topic Areas:

Low

TSP Technical Rating:
Above Average

TSP Funding Recommendation:
Do Not Fund

TSP Amount Recommended: $**0**

Conditions:

External Technical Review #1

Proposal Title: Tests of passive control methods to prevent upstream movements of New Zealand mudsnails

Proposal Number: 0054

Proposal Applicant: Colorado State University

Purpose

Comments	**The goals, objectives and hypotheses are clearly stated and internally consistent. This project is very timely and could develop technologies for limiting the spread of New Zealand mudsnail, and invasive species that is present in the CalFed watershed. Currently there are no methods of control for this snail. If the research designates a method for control of upstream spread, the applications could be more extensive, perhaps controlling spread of the snails into water diversion canals and water treatment facilities throughout the CalFed area. The results will add substantially to the base of knowledge, as only anecdotal information is available on this proposed method.**
Rating	**Superior**

Background

Comments	**The conceptual model is clearly stated and explains the underlying basis for the proposed work. All information is well documented and includes the most up-to-date information on infestations of this species.**
Rating	**Superior**

Approach

Comments	The approach is well designed and appropriate for meeting the project objectives. It is clear who will perform management and administrative tasks, and time and funding are set aside for this work. The research will provide valuable information to scientists and resource and facilities managers. While there is a plan for dissemination of the information, it could be more extensive. Also, there is a federal New Zealand mudsnail website, and all information derived from this study should be linked to that site, and there is no indication that this will occur.
Rating	Above Average

Feasibility

Comments	The approach is both fully documented and technically feasible. There is a very high likelihood of success. The scale of the project is consistent with the objectives and well within the grasp of the authors. I would, however, like to see more types of pipes, conveyance structures, etc. used during the experiments.
Rating	Above Average

Budget

Comments	The budget is detailed. It seems reasonable and adequate to complete the administrative activities, research and dissemination of information proposed.
Rating	Superior

Relevance To CALFED

Comments	The research directly addresses Research Priority Topic 2 – Aquatic Invasive Species. The proposal uses

	existing information on the target species, similar taxa and target environments. Through the analysis of potential leaching of toxic substances from the substrates being considered, it addresses potential water quality concerns. The results will be the first tool available to CalFed resource managers and policy makers that could potentially limit the spread of New Zealand mudsnail in the CalFed area.
Rating	Superior

Qualifications

Comments	The researcher is very well qualified and the research facilities are available to perform the work. Dr. Myrick currently has a California Scientific Collector's Permit that would need to be modified prior if there is to be any collection of snails in California. This could take several weeks. Collection of snails in Colorado is possible without a California permit.
Rating	Above Average

Overall Evaluation Summary Rating

Comments	I think that this is a very worthwhile project that should be funded. There is a lot of concern among watershed groups and fishing organizations who are concerned with the potential for fundamental shifts in stream food webs with the introduction of NZM. The research is overdue, as more and more populations of New Zealand mudsnail are occurring not only in the CalFed area, but statewide. The state water project could be a vector for passage to southern California. Any mechanisms to reduce spread should be examined.
Rating	Superior

External Technical Review #2

Proposal Title: Tests of passive control methods to prevent upstream movements of New Zealand mudsnails

Proposal Number: 0054

Proposal Applicant: Colorado State University

Purpose

Comments	**Goals, objectives and hypotheses are clearly stated and internally consistent. The goal and objectives are pretty straightforward; to determine whether copper sheets or copper−based antifoulant paints can be used to prevent the upstream movement of an exotic invader (the New Zealand mudsnail). This species is currently present in the Bay−Delta System, so this study would provide practical information directly applicable to this system. While this study would add to the base of knowledge, there is already some evidence that these snails avoid copper sheets and that this can be used to inhibit upstream movement. There is also the issue that these snails can drift down−current, thus controlling upstream movement takes care of only a small part of the snails potential to spread into new habitats. This holds even more as one considers that the primary mode of range expansion for the snail appears to be inadvertent transport (by anglers etc.).**
Rating	**Above Average**

Background

Comments	**The underlying basis for the proposed work is well explained (the background for this project is relatively simple). I would expect though that more background (beyond what is reported here) is available on the efficacy of the proposed control method on these and other snails.**
Rating	

	Sufficient

Approach

Comments	**The approach is well designed and appropriate for meeting this project's objectives. It is well described who will be performing the various tasks. Products of value are likely from this project (information on controlling upstream movement of these snails), though – as stated above – this is only a relatively small component in limiting the range expansion of these exotic snails.**
Rating	**Above Average**

Feasibility

Comments	**The approach is fully documented and technically feasible (the project is very straightforward from a scientific point of view). The scale of the project should be within the grasp of the researchers (PI, grad student and undergrad).**
Rating	**Superior**

Budget

Comments	**The budget is generally clear with respect to the costs of each task. The total budget (at just under 300K) is not huge, but it is high for this relatively modest project (with the work basically being done by one grad student (at MS level) with assistance from an undergrad student). Thus 60K for administration costs (Task 1) seems out of proportion. The PI list a pending grant proposal with the same topic, with a total budget of 20.5K**
Rating	**Sufficient**

Relevance To CALFED

Comments	This proposal deals with one of the priorities stated for this PSP (topic 2: aquatic invasive species) and some of the "questions to be addressed by the research" (control and management options). The research deals with one of the invasives of concern listed in the PSP. The proposal does not address the other priorities (integration, modeling etc.). The information generated is of an applied nature and is likely to be useful to CALFED resource managers and policy makers.
Rating	Superior

Qualifications

Comments	While the PI does not have a proven track record for this type of research, the project as a whole is straightforward and the PI should be able to implement the proposed project. The required infrastructure and support appears to be available.
Rating	Sufficient

Overall Evaluation Summary Rating

Comments	The project would provide useful information to CALFED, but the usefulness is fairly limited (the project addresses only upstream movement of the snail). The project is fairly limited from a scientific standpoint and is relatively expensive.
Rating	Sufficient

External Technical Review #3

Proposal Title: Tests of passive control methods to prevent upstream movements of New Zealand mudsnails

Proposal Number: 0054

Proposal Applicant: Colorado State University

Purpose

Comments	**This proposal is well written and extremely clear in goals and objectives. The project is timely, important, and justified. Results from the research would be extremely helpful for managers attempting to minimize and manage for future mudsnail invasions.**
Rating	**Superior**

Background

Comments	**The conceptual model is extremely clear and explains well the basis for the work. All other information is included and well documented.**
Rating	**Superior**

Approach

Comments	**The approach is well designed. Testable hypotheses are clearly outlined. Tasks are clearly defined for individuals. The products (publications, presentations, and reports) are likely of value for those managers interested in mudsnail invasions. Dissemination will be widespread with website, conference papers, publications and reports.**
Rating	**Superior**

Feasibility

Comments	**This project is well documented and fully feasible. Experience and publication history of the principal investigator indicates a high likelihood of success. Perhaps the only lack of experience seems to be that the principal investigator is more experienced with experiments and aquaculture dealing with fish rather than with mudsnails. However, the qualification section indicates that the author has some experience with mudsnails.**
Rating	**Superior**

Budget

Comments	**The budget is very clear and reasonable for the work proposed. No cost sharing from the authors, but still a reasonable budget and a good value for the work proposed.**
Rating	**Above Average**

Relevance To CALFED

Comments	**The proposal addresses two questions from the Aquatic Invasives Priority section of in the PSP. The questions that this work could answer for the mudsnail include, 1) can actions be taken to reduce introductions, and 2) how can management alter the likelihood of invasibility. Additionally the project will use a novel approach to control the spread of invasive mudsnails and investigate potential adverse effects (copper release) from the new technique. The project will also explore the use of control measures used successfully elsewhere and will target an invasive species of concern.**
Rating	**Sufficient**

Qualifications

Comments	The author's past performance in conducting laboratory experiments and publishing research findings is substantial. His experience should allow him to implement the project with ease, assuming he employs a suitable graduate student. The new Fish Physiology Ecology Laboratory at Colorado State will be a suitable place to conduct this research without the worry of accidental introduction during experimentation.
Rating	Above Average

Overall Evaluation Summary Rating

Comments	This proposal was extremely well written, scientifically sound, and timely. The research findings generated would be extremely valuable for resource managers attempting to curb future invasions of mudsnails. The author has the experience to complete the project in a timely manner, the budget is reasonable, and careful thought in research planning would likely lead to success. Overall, this is the best proposal I have read for CALFED (n=6 proposals).
Rating	Superior